AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) An integrated circuit comprising an improved conductor-insulator-conductor (CIC) sandwich, wherein the CIC sandwich comprises:

a first conducting layer;

a first insulating layer deposited over the first conducting layer, wherein the first insulating layer comprises a structure having a plurality of oxygen cites partially filled by a plurality of oxygen atoms, wherein the unfilled oxygen cites define a concentration of oxygen vacancies;

a second conducting layer formed of IrO_x deposited over the first insulating layer wherein the second conducting layer is oxidized such that the quantity of oxygen atoms within the upper electrode is greater than that which is required for stoicheometric stability such that oxygen atoms in the second conducting layer absorb oxygen vacancies that migrate into the second conducting layer wherein x is greater than 2.0 and less than 2.5 wherein the first conducting layer, the first insulating layer and the second conducting layer define a three-dimensional contour;

an oxygen-rich interface layer interposed between the first insulating layer and the second conducting layer, wherein the oxygen-rich interface layer acts a sink for absorbing oxygen vacancies that migrate from the first insulating layer so as to reduce the buildup of oxygen vacancies at the interface layer and so as to reduce the concentration of oxygen vacancies of the first insulating layer.

2. (Original) The integrated circuit of Claim 1, wherein the second conducting layer comprises a plurality of oxygen-rich regions that are distributed throughout the second conducting layer, said regions absorbing oxygen vacancies that migrate through the second conducting layer.

3. (Original) The integrated circuit of Claim 2, wherein the second conducting layer comprises a material selected from the group consisting of platinum (Pt), ruthenium (Ru), ruthenium oxide (RuO_x), iridium (Ir), iridium oxide (IrO_x), palladium (Pd), tungsten (W), tungsten nitride (WN), tantalum nitride (TaN), titanium nitride (TiN), and titanium oxygen nitride (TiON).

4. (Original) The integrated circuit of Claim 2, wherein the second conducting layer has a thickness between 100 Å and 2000 Å.

5. (Previously Presented) The integrated circuit of Claim 2, wherein the second conducting layer is highly oxidized.

6. Cancelled.

7. Cancelled.

8. (Original) The integrated circuit of Claim 2, wherein the first conducting layer comprises a material selected from the group consisting of conductively doped polysilicon, hemispherical grain (HSG) polysilicon, platinum (Pt), ruthenium (Ru), ruthenium oxide (RuO_x), iridium (Ir), iridium oxide (IrO_x), palladium (Pd), tungsten (W) tungsten nitride (WN_x), tantalum nitride (TaN), titanium nitride (TiN), and titanium oxygen nitride (TiON).

9. (Original) The integrated circuit of Claim 1, wherein the structure of the first insulating layer is a crystalline structure.

10. (Currently Amended) A CIC structure comprising:

a first electrode layer formed in a via so as to contour the via;

a dielectric layer formed on the first electrode layer so as to overlie the first electrode layer, wherein the dielectric layer defines a structure having a first concentration of oxygen vacancies; and

a second electrode layer <u>comprising IrO_x wherein x is greater than 2.0 and less than 2.5</u> formed on the dielectric layer so as to overlie the dielectric layer, wherein the second electrode layer is formed in a strongly oxidizing ambient selected such that the quantity of oxygen atoms within the second electrode is greater than that which is required for stoicheometric stability such that oxygen atoms in the second electrode absorb oxygen vacancies that migrate into the second electrode and so as to diffuse at least a portion of the oxygen atoms into the dielectric layer to thereby reduce the concentration of oxygen vacancies in the dielectric layer from the first concentration and so as to define an oxygen-rich interface layer between the second electrode layer and the dielectric layer that subsequently absorbs the displaced oxygen vacancies migrating out of the dielectric layer, wherein reducing the concentration of oxygen vacancies in the dielectric layer provides the dielectric layer with improved electrical characteristics.

11. (Previously Presented) The structure of Claim 10, wherein the first electrode layer, the dielectric layer, and the second electrode layer define a three-dimensional contour.

12. (Previously Presented) The structure of Claim 10, wherein the CIC structure is formed in a via such that the first electrode layer, the dielectric layer, and the second electrode layer contour the via.

13. (Previously Presented) The structure of Claim 12 wherein the via is formed in an interdielectric layer.

14. (Previously Presented) The structure of Claim 10, wherein the second electrode layer comprises a plurality of oxygen-rich regions that are distributed throughout the second electrode layer, said regions absorbing oxygen vacancies that migrate through the second electrode layer.

15. (Previously Presented) The structure of Claim 10, wherein the second electrode layer comprises a material selected from the group consisting of platinum (Pt), ruthenium (Ru), ruthenium oxide (RuO_x), iridium (Ir), iridium oxide (IrO_x), palladium (Pd), tungsten (W), tungsten nitride (WN), tantalum nitride (TaN), titanium nitride (TiN), and titanium oxygen nitride (TiON).

16. (Previously Presented) The structure of Claim 10, wherein the second electrode layer has a thickness between 100 Å and 2000 Å.

17. (Previously Presented) The structure of Claim 10, wherein the second electrode layer is highly oxidized.

18. Cancelled.

19. Cancelled

20. (Previously Presented) The structure of Claim 10, wherein the first electrode layer comprises a material selected from the group consisting of conductively doped polysilicon, hemispherical grain (HSG) polysilicon, platinum (Pt), ruthenium (Ru), ruthenium oxide (RuO_x), iridium (Ir), iridium oxide (IrO_x), palladium (Pd), tungsten (W) tungsten nitride (WN_x), tantalum nitride (TaN), titanium nitride (TiN), and titanium oxygen nitride (TiON).

21. (Previously Presented) The structure of Claim 10, wherein the structure of the dielectric layer is a crystalline structure.

22. (Currently Amended) A CIC device comprising:

a lower electrode;

a dielectric layer formed on the lower electrode, wherein the dielectric layer comprises a first concentration of oxygen vacancies; and

an upper electrode formed of IrO_x wherein x is greater than 2.0 and less than 2.5 formed on the dielectric layer, wherein the upper electrode is deposited in a strongly oxidizing ambient selected so as to form a highly oxidized upper electrode with an oxygen-rich interface later at the interface between the dielectric layer and the upper electrode that subsequently absorbs the displaced oxygen vacancies migrating out of the dielectric layer while oxidizing the dielectric layer to thereby reduce the concentrations of oxygen vacancies in the dielectric layer from the first concentration, and wherein reducing the concentration of oxygen vacancies in the dielectric layer provides the CIC device with increased capacitance and wherein the quantity of oxygen atoms within the upper electrode is greater than that which is required for stoicheometric stability such that oxygen atoms in the upper electrode absorb oxygen vacancies that migrate into the second electrode.

23. (Previously Presented) The device of Claim 22, wherein the lower electrode, the dielectric layer, and the upper electrode define a three-dimensional contour.

24. (Previously Presented) The device of Claim 22, wherein the CIC device is formed in a via such that the lower electrode, the dielectric layer, and the upper electrode contour the via.

25. (Previously Presented) The device of Claim 24 wherein the via is formed in an interdielectric layer.

26. (Previously Presented) The device of Claim 22, wherein the upper electrode comprises a plurality of oxygen-rich regions that are distributed throughout the upper electrode, said regions absorbing oxygen vacancies that migrate through the upper electrode.

27. (Previously Presented) The device of Claim 22, wherein the upper electrode comprises a material selected from the group consisting of platinum (Pt), ruthenium (Ru), ruthenium oxide (RuO_x), iridium (Ir), iridium oxide (IrO_x), palladium (Pd), tungsten (W), tungsten nitride (WN), tantalum nitride (TaN), titanium nitride (TiN), and titanium oxygen nitride (TiON).

28. (Previously Presented) The device of Claim 22, wherein the upper electrode has a thickness between 100 Å and 2000 Å.

29. (Previously Presented) The device of Claim 22, wherein the upper electrode is highly oxidized.

30. Cancelled.

31. Cancelled.

32. (Previously Presented) The device of Claim 22, wherein the lower electrode comprises a material selected from the group consisting of conductively doped polysilicon, hemispherical grain (HSG) polysilicon, platinum (Pt), ruthenium (Ru), ruthenium oxide (RuO_x), iridium (Ir), iridium oxide (IrO_x), palladium (Pd), tungsten (W) tungsten nitride (WN_x), tantalum nitride (TaN), titanium nitride (TiN), and titanium oxygen nitride (TiON).

33. (Previously Presented) The device of Claim 22, wherein the structure of the dielectric layer is a crystalline structure.

34. (Currently Amended) A CIC structure comprising:

first and second conductive layers;

an insulating layer interposed between the first and second conductive layers wherein the insulting layer includes a plurality of oxygen vacancies; and

an interface layer interposed between the insulating layer and the second conductive layer wherein the interface layer includes an increased concentration of oxygen atoms such that exposure to an electric field urges a portion of the oxygen vacancies in the insulating layer to migrate toward the interface layer and wherein the second conductive layer is formed of IrO_x wherein x is greater than 2.0 and less than 2.5 is oxidized such that the quantity of oxygen atoms within the second conductive layer is greater than that which is required for stoicheometric stability such that oxygen atoms in the upper electrode absorb oxygen vacancies that migrate into the second conductive layer.

35. (Previously Presented) The structure of Claim 34, wherein the insulating layer is deposited over the first conductive layer, and wherein the insulating layer comprises a plurality of oxygen cites that are partially filled with a plurality of oxygen atoms, and wherein the unfilled oxygen cites define a first concentration of oxygen vacancies.

36. (Previously Presented) The structure of Claim 34, wherein the second conductive layer is deposited over the insulating layer, and wherein the interface layer is interposed between the insulating layer and the second conductive layer, wherein the interface layer absorbs oxygen vacancies that migrate from the first conductive layer so as to reduce the buildup of oxygen vacancies at the interface layer and so as to reduce the first concentration of oxygen vacancies of the insulating layer.

37. (Previously Presented) The structure of Claim 34, wherein the first conductive layer, the insulating layer, and the second conductive layer define a three-dimensional contour.

38. (Previously Presented) The structure of Claim 34, wherein the CIC device is formed in a via such that the first conductive layer, the insulating layer, and the second conductive layer contour the via.

39. (Previously Presented) The structure of Claim 38 wherein the via is formed in an interdielectric layer.

40. (Previously Presented) The structure of Claim 34, wherein the second conductive layer comprises a plurality of oxygen-rich regions that are distributed throughout the second conductive layer, said regions absorbing oxygen vacancies that migrate through the second conductive layer.

41. (Previously Presented) The structure of Claim 34, wherein the second conductive layer comprises a material selected from the group consisting of platinum (Pt), ruthenium (Ru), ruthenium oxide (RuO_x), iridium (Ir), iridium oxide (IrO_x), palladium (Pd), tungsten (W), tungsten nitride (WN), tantalum nitride (TaN), titanium nitride (TiN), and titanium oxygen nitride (TiON).

42. (Previously Presented) The structure of Claim 34, wherein the second conductive layer has a thickness between 100 Å and 2000 Å.

43. (Previously Presented) The structure of Claim 34, wherein the second conductive layer is highly oxidized.

44. Cancelled.

45. Cancelled.

46. (Previously Presented) The structure of Claim 34, wherein the first conductive layer comprises a material selected from the group consisting of conductively doped polysilicon,

hemispherical grain (HSG) polysilicon, platinum (Pt), ruthenium (Ru), ruthenium oxide (RuO_x), iridium (Ir), iridium oxide (IrO_x), palladium (Pd), tungsten (W) tungsten nitride (WN_x), tantalum nitride (TaN), titanium nitride (TiN), and titanium oxygen nitride (TiON).

47. (Previously Presented) The structure of Claim 34, wherein the structure of the insulating layer is a crystalline structure.